SUPPLEMENTAL MATERIAL

Ambiguity produces attention shifts in category learning

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Cue attentional advantage Stage 1B

Figure S1 shows the development of attentional advantage for cues A/B and C/D across epochs of trials during Stage 1B. Panels A and B refer to Experiments 1 and 2, respectively. A Group × Cue × Epoch ANOVA on data from Experiment 1 yielded only a significant main effect of Epoch, $F(6.11, 586.85) = 4.39$, $p < .001$, $\eta^2_p = .044$. The rest of the main effects and interactions were non-significant, largest $F(7, 672) = 1.51$, $p = .160$. Similarly, In Experiment 2 only the main effect of Epoch reached statistical significance, $F(3, 609) = 5.87$, $p = .001$, $\eta^2_p = .028$. All other main effects and interactions were non-significant, largest $F(1, 203) = 2.07$, $p = .152$.

Raw reaction times in Stage 2

For the sake of simplicity, in the main text we only provide an analysis of cue attentional advantages. As shown in this section, the analysis of raw reaction times converges to the same conclusion, although the main findings are more difficult to interpret due to the large number of significant higher-order interactions. Figure S2 shows reaction times to the dot during Stage 2. Trials were considered 'congruent' when the dot appeared on a predictive cue (A-D) and 'incongruent' when they appeared on the contextual cue (X). A Group × Congruency × Cue × Epoch ANOVA on reaction times from Experiment 1 yielded significant main effects of Group, $F(1, 98) = 13.04$, $p < .001$, $\eta^2_p = .117$, Congruency, $F(1, 98) = 15.23$, $p < .001$, $\eta^2_p = .135$, and Epoch, $F(1.88, 184.77) = 36.77$, $p < .001$, $\eta^2_p = .273$. The main effect of Cue was marginally significant, $F(1, 98) = 2.99$, $p = .087$, $\eta^2_p = .030$. Several interactions also reached full or marginal significance. These

included the interactions Group × Cue, $F(1, 98) = 11.36$, $p = .001$, $\eta^2_p = .104$, Group × Epoch, $F(2, 196) = 18.25$, $p < .001$, $\eta^2_p = .157$, Group × Congruency × Group, $F(1, 98) = 3.45$, $p = .066$, $\eta^2_p = .034$, Congruency × Epoch, $F(2, 196) = 3.31$, $p = .038$, $\eta^2_p = .033$, and Congruency × Cue × Epoch, $F(2, 196) = 2.85$, $p = .060$, $\eta^2_p = .028$. The remaining effects were far from statistical significance, largest $F(2, 196) = 1.72$, $p = .182$.

Finally, an ANOVA on reaction time data from Experiment 2 yielded significant main effects of Group, $F(1, 202) = 21.93$, $p < .001$, $\eta^2_p = .098$, Congruency, $F(1, 202) = 94.48$, $p < .001$, $\eta^2_p = .319$, Cue, $F(1, 202) = 38.33$, $p < .001$, $\eta^2_p = .159$, and Epoch, $F(2.63, 530.53) = 34.98$, $p < .001$, $\eta^2_p = .148$. The significant or marginally significant interactions were Group × Congruency, $F(1, 202) = 6.29$, $p = .013$, $\eta^2_p = .030$, Group × Cue, $F(1, 202) = 18.44$, $p < .001$, $\eta^2_p = .084$, Group × Epoch, $F(3, 606) = 23.78$, $p < .001$, $\eta^2_p = .105$, Group × Congruency × Cue, $F(1, 202) = 3.68$, $p = .056$, $\eta^2_p = .018$, Cue × Epoch, $F(2.85, 574.89) = 5.26$, $p = .002$, $\eta^2_p = .025$, and Group × Cue × Epoch, $F(3, 606) = 7.14$, $p < .001$, $\eta^2_p = .034$. Among the rest of effects, the Group × Congruency × Epoch interaction was the closest to statistical significance, $F(3, 606) = 1.79$, $p = .148$, $\eta^2_p = .009$.

Table S1. Design Summary of Experiment 2

	Stage 1A	**Stage 1B**	**Stage 2**
	4 blocks x 8 trials	8 blocks x 32 trials	8 blocks x 16 trials
	Only categorization	Categorization + dot probe	
Group Reversed	YA – 1 YB – 2 YC – 1 YD – 2	XA – 1 YA – 1 XB – 2 YB – 2 XC – 1 YC – 1 XD – 2 YD – 2	**XA – 2** **XB – 1** XC – 1 XD - 2
Group Same			**XA – 1** **XB – 2** XC – 1 XD - 2

Note. Letters A-D denote different cues with distinctive colors and shapes. X and Y denote two dark rectangles of different colors playing the role of contextual cues. Numbers 1 and 2 refer to the correct categories associated with each pair of cues.

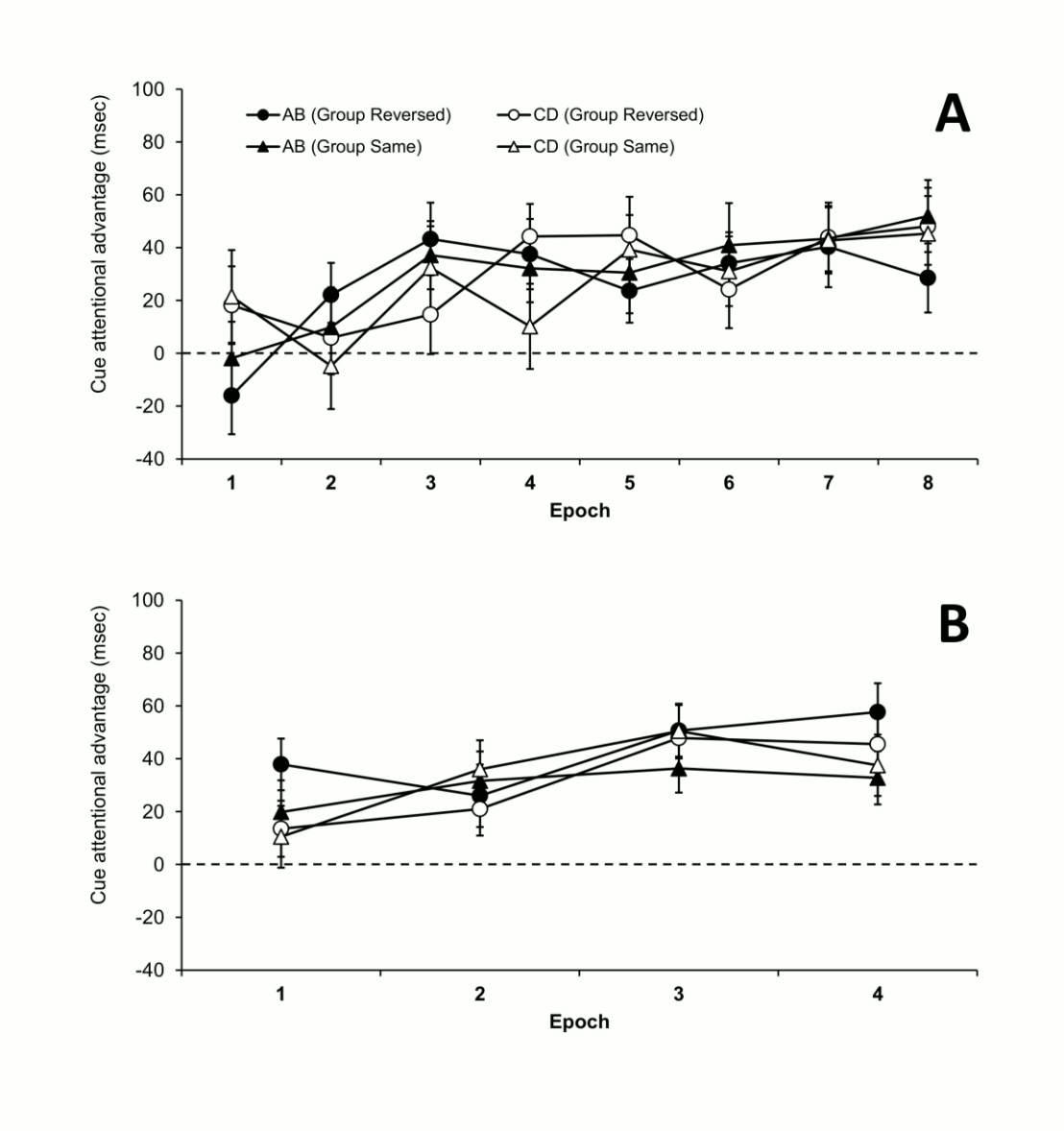

Figure #S1. Mean attentional advantage for cues A/B and C/D during Stage 1B in Experiments 1 and2 (panels A and B, respectively). Attentional advantage was computed by subtracting participants' reaction time when the dot-probe was presented on cues A-D from their reaction time when the dot was presented on contextual cue X. Error bars denote the standard error of the means. Each epoch comprises data from two blocks of trials.

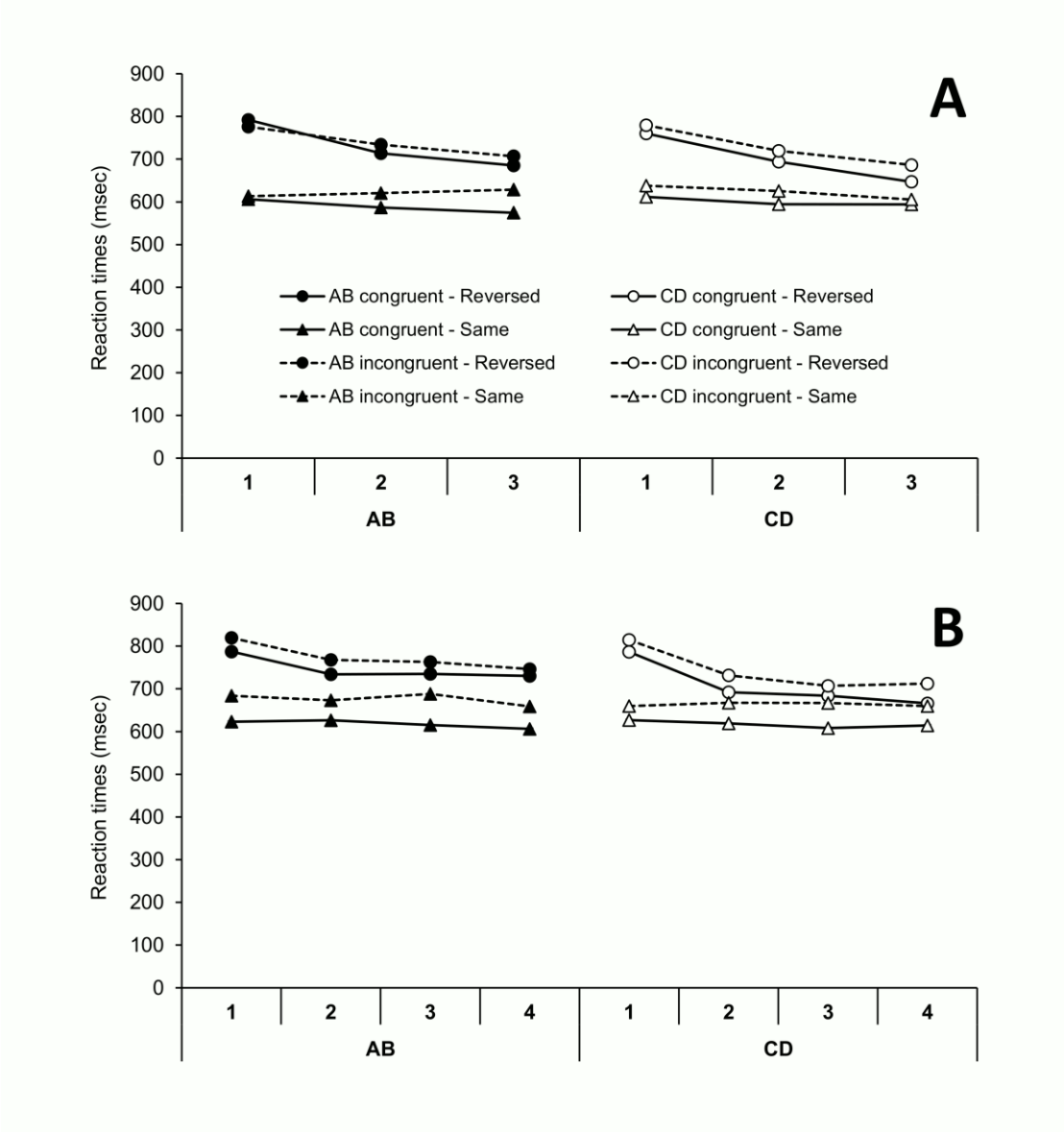

Figure #S2. Mean reaction times in the dot probe task for cues A/B and C/D during Stage 2 test in Experiments 1 and 2 (panels A and B, respectively). On 'congruent' trials the dot appeared on a predictive cue (A-D), while on 'incongruent' trials the dot appeared on the contextual cue X.